Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 1-2. These (3) sheets, which includes Figs. 1, 1A, 1B, 2 and 2A, replaces the prior (2) sheets including Figs. 1 and 2.

Attachment: (3) Replacement Sheets

Remarks

Claims 1-5, 7-9 and 15 are pending in the application. A Final Office Action was issued on February 2, 2010, in which claims 1-5, 7-9 and 15 were rejected and the drawings were objected to. A telephonic interview was conducted on February 16, 2010, where the Examiner indicated that the previously filed drawings were acceptable and that claiming the outlet as a branch line was a possible way to distinguish the clean line heated valve from the prior art. Applicant filed an Amendment under 37 CFR § 1.116 on April 2, 2010, resubmitting the drawings and amending the claims, as suggested by the Examiner. An Advisory Action was issued on April 8, 2010 stating that the Amendment of April 2, 2010 would not be entered because "the claims recite features not previously considered." Additionally, the Advisory Action of April 8, 2010 indicated that "the drawings filed on April 2, 2010 are approved."

By this paper Applicant has amended claims 1 and 7; cancelled claims 4, 5, 8, 9 and 15, amended the specification, and resubmitted the approved drawings that were submitted in the unentered Amendment of April 2, 2010. Applicant respectfully traverses the rejections of claims, however Applicant has amended the claims to further examination of the application.

Drawing Objections

The drawings were objected to regarding the notch 11. (Page 2 of the Final Office Action of February 2, 2010). Applicant resubmitted the drawings originally filed on January 16, 2009 in the Amendment of April 2, 2010. The Examiner approved the drawings in the Advisory Action of April 8, 2010. By this paper Applicant resubmits the drawings (including Figs. 1, 1A, 1B, 2 and 2A 1), that were filed on January 16, 2009 and again on April 2, 2010.

Claim Rejections - 35 U.S.C. § 102(b)

Claims 1-5, 7-9 and 15 are rejected under 35 U.S.C. § 102(b) as being anticipated by Miyamoto et al. (US 5,520,001).

Claim 1 as amended requires "a smooth and contoured unitary valve body with an integral upstream connector extending from the body, a downstream connector extending from the body, and a smooth and contoured internal shape for providing a defined liquid flow path therebetween". (Emphasis added). The Examiner relies on a unnumbered recess formed within Miyamoto et al.'s valve block 20 that receives joint 13 for satisfying the upstream connector limitation. ("inlet connector 13 attached to an integral upstream connector", Page 3 of the Final Office Action of February 2, 2010). The recess which receives joint 13 does not extend from valve block 20. (Miyamoto et al., Fig. 1). The internal interface between the recess of valve block 20 and joint 13 would provide a crevice for product to lodge, which could harbor microbiological contamination as described in the background section of this application. (Paragraph [0014]). Miyamoto et al. do not teach "an integral upstream connector extending from the body" as claimed, and therefore claim 1 is not anticipated by Miyamoto et al.

Claim 1 as amended also requires a "a downstream connector extending from the body". The Examiner relies on a unnumbered recess formed within Miyamoto et al.'s valve block 20 that receives joint 14 for satisfying the downstream connector limitation. (Page 3 of the Final Office Action of February 2, 2010). As stated above regarding the upstream connector, the recess that receives joint 14 does not extend from the body. Miyamoto et al. do not teach every element of claim 1, and claim 1 is not anticipated by Miyamoto et al.

Further, claim 1 requires a "valve body . . . for providing a defined liquid flow path . . . having a downstream void in liquid communication with the downstream connector". The Examiner states that "Miyamoto et al. discloses a valve which has a liquid component to the inlet flow and which reasonably has a liquid component to the outlet flow". (Page 4 of the Final Office Action of February 2, 2010, emphasis added).

The Examiner misinterprets Miyamoto et al.'s disclosure of 'a liquid material to be vaporized as far as possible' as implying that Miyamoto et al.'s valve "reasonably has a liquid component to the output flow". (Page 4 of the Final Office Action of February 2, 2010). Miyamoto et al. disclose:

> A vapor controller capable of reducing a thermal influence upon a liquid material to be vaporized as far as possible and always stably controlling a vaporized gas in flow rate in high-speed response and a vapor controller having a vaporizer capable of improving a purge efficiency are provided.
>
> Miyamoto et al., Abstract.

Miyamoto et al. teach reducing thermal influences "as far as possible", and "always controlling a vaporized gas". (Miyamoto et al., Abstract). The Examiner's interpretation of Miyamoto et al. as "reasonably" having a liquid component to the output flow conflicts with the teachings of Miyamoto et al. Miyamoto et al. teach "a vapor controller capable of quantitatively vaporizing liquid materials, such as silicon tetrachloride (SiCl.sub.4), used in for example an apparatus for producing semiconductors." (Miyamoto et al., Col. 1, lines 6-11, emphasis added). Miyamoto et al. refers to the outlet of his vaporizer as a "gas outlet passage 5" which "lead[s] a gas G generated in said vaporizing chamber 21 out of the body block 1a." (Miyamoto et al. Col. 5, lines 40-42, emphasis added). Further Miyamoto et al disclose that "the liquid material LM is speedily vaporized by a pressure-drop accompanied by the flow thereof into the vaporizing chamber 21 and a heating . . . by means of the heater 2". (Miyamoto et al., Col. 7, lines 25-29, emphasis added). Miyamoto et al. does not teach liquid communication with the downstream connector, and therefore does not anticipate claim 1.

Claims 2 and 3 depend from claim 1 and therefore are not anticipated for at least the reasons stated above with reference to claim 1.

Claims 4 and 5 are cancelled by this paper.

Claim 7 as amended requires "a downstream connector extending transversely from the body to form a branch line for selectively draining a portion of the liquid passing through the body". The Examiner relies on an unnumbered recess formed within Miyamoto et al.'s valve block 20 that receives joint 14 for satisfying the downstream connector limitation. (Page 3 of the Final Office Action of February 2, 2010). Miyamoto et al. teach a liquid material input port 6 and a gas outlet port 11, where "[r]eference numerals 13, 14 designates a joint connected with said liquid material inlet port 6 and said gas outlet port 11, respectively." (Miyamoto et al., Col. 5, lines 42-44, Fig.1). Miyamoto et al. teach a valve block 20 with an adjustable diaphragm 23 between the input port 6 and output port 11 "for adjusting a flow rate of the liquid material LM and shutting off the liquid material LM". (Miyamoto et al., Col. 6, lines 31-36, emphasis added). Thus Miyamoto et al. teach a shut off valve for controlling the flow of all the fluid through a body and not "a branch line for selectively draining a portion of the liquid passing through the body" as claimed. Miyamoto et al. do not teach every element of claim 7, and claim 7 is not anticipated by Miyamoto et al.

Claim 7 as amended also requires "a smooth and contoured unitary valve body with an integral upstream connector extending from opposing sides of the body to define a cylindrical passage through the body for supplying liquid". (Emphasis added). The Examiner relies on a unnumbered recess formed within Miyamoto et al.'s valve block 20 that receives joint 13 for satisfying the upstream connector limitation. (Page 3 of the Final Office Action of February 2, 2010). Miyamoto et al. teach an inlet joint 13 and outlet joint 14 that attach to recesses formed in opposing side surfaces (7 and 12) of the valve block 20. (Miyamoto et al., Fig. 1). Miyamoto et al. teach attached joints and not an integral upstream connector that extends from "opposing side surfaces" as claimed. Miyamoto et al. do not teach every element of claim 7, and claim 7 is not anticipated by Miyamoto et al.

Further, claim 7 requires "an elongated heater mounted . . .within a cylindrical cavity formed in said valve body in a location axially offset from the upstream connector". The Examiner relies on Miyamoto et al.'s heater 2 for satisfying the heater limitation, and a recess that receives joint 13 for satisfying the upstream connector limitation. (Page 3 of the Final Office Action of February 2, 2010). Miyamoto et al. teach a heater 2 that is transversely oriented

relative to the joint 13 (upstream connector). (Fig. 2). A transverse orientation is not axially offset. Miyamoto et al. do not teach every element of claim 7, and claim 7 is not anticipated by Miyamoto et al.

Claim 7 has also been amended to include limitations of previously presented claim 9. Claim 7 as amended requires "a slotted cavity to provide a thermal break for preventing the heating of the liquid within the upstream connector". The Examiner relies on Miyamoto et al.'s openings 8 and 10 and the cavity holding sensor 3 for satisfying the cavity limitation, and a recess that receives joint 13, for satisfying the upstream connector limitation. (Page 3 of the Final Office Action of February 2, 2010). The Examiner states that the "cavities will inherently conduct heat less efficiently." (Page 5 of the Final Office Action of February 2, 2010). Miyamoto et al. teach a "cartridge heater 2 and thermocouple, heating the whole body block 1a". (Miyamoto et al., Col. 5, lines 23-26, emphasis added). By heating the whole body block Miyamoto teach heating the upstream connector, and any liquid within the upstream connector. Therefore Miyamoto et al. does not teach "a slotted cavity to provide a thermal break for preventing the heating of the liquid within the upstream connector" as claimed. Miyamoto et al. does not teach every element of claim 7, and claim 7 is not anticipated by Miyamoto et al.

Claims 8, 9 and 15 are cancelled by this paper.

Claim Rejections - 35 U.S.C. § 103

Claims 1-5, 7-9 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyamoto et al. in view of Nagano (US 6,006,701).

The Examiner relies on Miyamoto et al. for satisfying all claims. Alternatively the Examiner relies on Nagano's heater H for satisfying the elongated heater limitation of claims 1, 7 and 15. (Pages 5 and 6 of the Final Office Action of February 2, 2010). As stated above claims 1-3, and 7 are not anticipated by Miyamoto et al. and therefore the Examiner's obvious rejection fails to satisfy all claim limitations.

Claim 1 requires a "valve body . . . for providing a defined liquid flow path . . . having a downstream void in liquid communication with the downstream connector". As stated above, Miyamoto et al. does not satisfy this limitation. Nagano teaches "vaporizers used in liquid material vaporizing and feeding apparatus for feeding a special liquid-vaporized gas to a semiconductor manufacturing line or the like." (Nagano, Col. 1, lines 7-9). Nagano teaches a vaporizer 10 having a liquid material inlet 22 and a gas outflow passage 32. (Nagano, Col. 3, lines 16-23, Fig. 1C). Nagano does not teach or suggest a liquid component to the output gas. Miyamoto et al. and Nagano, alone or in combination do not teach or suggest a valve having "liquid communication with the downstream connector" as claimed. Therefore claim 1 is nonobvious over the Examiner's combination.

Additionally, Nagano teaches that "[i]t is desirable that a closing valve be mounted in the liquid material inlet 22 to prevent the leakage of liquid material to the vaporizer side and thereby enhance the reliability of the device." (Nagano, Col. 6, lines 64-67). Nagano teaches preventing liquid material from leaking to the vaporizer side (output), therefore Nagano teaches away from a valve having a liquid output.

Further, Miyamoto et al. and Nagano teach vaporizers with small internal fluid passages. Miyamoto et al. teach a range of (0.5 to 5mm) for the inside diameter of the liquid material inlet 4, and a range of (2 to 4 mm) for the inside diameter of the gas outlet passage 5. (Miyamoto et al., Col. 5, lines 54-56, Fig. 1). The vaporizing chamber 21 is described as having a "remarkably small volume" (Miyamoto et al., Col. 7, line 37). Nagano teaches that diameter A (Fig. 1C) is about 8 mm, therefore smaller dimensions are inferred for the diameter of liquid inlet 22 and gas outflow passage 32 from Figs. 1B and 1C. (Nagano, Col. 5, lines 60-62). Valves having small diameter fluid passages, such as those taught by both Miyamoto et al. and Nagano, would be impractical for generating a liquid output, because flow rates would be low and therefore it would take a long period of time to produce a sufficient quantity of liquid output. Miyamoto et al. and Nagano teach away from "liquid communication with the downstream connector" as claimed. Therefore claim 1 is nonobvious over the Examiner's combination.

Claims 2 and 3 depend from claim 1 and therefore are not obvious over Miyamoto et al. and Nagano for at least the reasons stated above with reference to claim 1.

Claims 4 and 5 are cancelled by this paper.

Claim 7 requires "liquid communication with the downstream connector" and is nonobvious over the Examiner's combination of Miyamoto et al. and Nagano for at least the reasons stated above for claim 1.

Claim 7 also requires "an elongated heater mounted . . .within a cylindrical cavity formed in said valve body in a location axially offset from the upstream connector". As stated above, Miyamoto et al. teach a heater 2 that is transversely oriented relative to the joint 13 (upstream connector). (Miyamoto et al. Fig. 2). Nagano teaches a vaporizer having a liquid material inlet 22 and heaters H. (Nagano, Col. 3, lines 16-17, Col. 4, lines 20-23, and Figs 1A and 1B). As illustrated in Figures 1A and 1B the heaters H are transversely oriented relative to the inlet 22. Both Miyamoto et al. and Nagano teach transverse orientations between their respective heater(s) and upstream connectors, and not an "axially offset" orientation as claimed. Therefore claim 7 is nonobvious over the Examiner's combination.

Claim 7 has also been amended to include limitations of previously presented claim 9. Claim 7 as amended requires "a slotted cavity to provide a thermal break for preventing the heating of the liquid within the upstream connector". As stated above Miyamoto et al. teach a "cartridge heater 2 and thermocouple, heating the <u>whole body block</u> 1a". (Miyamoto et al., Col. 5, lines 23-26, emphasis added). Nagano also teaches "[t]he <u>whole of the vaporizer 10</u> is held at approximately the same temperature by heating with the heaters H. (Nagano, Col. 4, lines 27-29, emphasis added). Heating a liquid until it vaporizes and becomes a gas takes more energy than it would take to locally heat a downstream connector, as taught by the Applicant. Both Miyamoto et al and Nagano teach heating the whole body block/vaporizer to vaporize a liquid, and therefore both teach away from “preventing the heating of the liquid within the upstream connector" as claimed. Therefore claim 7 is nonobvious over the Examiner's combination.

Claims 8, 9 and 15 are cancelled by this paper.

Conclusion

In view of the foregoing, Applicant respectfully asserts that the application is in condition for allowance, which allowance is hereby respectfully requested.

The Request for Continued Examination fee of $ 405 and the Petition fee of $ 65 is being charged to Deposit Account No. 02-3978 via electronic authorization submitted concurrently herewith. The Commissioner is hereby authorized to charge any additional fees or credit any overpayments as a result of the filing of this paper to Deposit Account No. 02-3978.

Respectfully submitted,

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Date: June 2, 2010

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